Claims

[c1] 1. A wind turbine comprising:

a nacelle;

a blade rotor hub adjacent to said nacelle;

a main shaft coupled to said hub and said nacelle;

a generator coupled to said shaft between said nacelle and said hub, wherein said generator includes generator rotor adjacent to said shaft, a stator positioned adjacent to and radially outward from said generator rotor; and,

a brake coupled to said generator and said shaft, said brake being positioned radially inward from said stator.

[c2] 2. The wind turbine of claim 1 wherein said brake further comprises a disk coupled to said shaft and at least one caliper brake coupled to said generator and positioned adjacent to said disk.

[c3] 3. The wind turbine of claim 1 wherein said generator further comprises a housing disposed about said rotor and stator.

[c4] 4. The wind turbine of claim 3 wherein said housing fur-

ther includes a recess with said brake being positioned within said recess.

[c5] 5. The wind turbine of claim 4 wherein said recess is positioned in said housing opposite said hub.

[c6] 6. The wind turbine of claim 4 further comprising:

a yaw drive in said nacelle adjacent to said yaw bearing; and,

a power electronics module, said power electronics being located inside said nacelle and electrically coupled to said generator and said transformer.

[c7] 7. A wind turbine comprising:

a tower having a yaw bearing attached at one end;

a nacelle having a bedplate connected to said yaw bearing; and,

a transformer within said tower opposite said nacelle.

[c8] 8. The wind turbine of claim 7 wherein said transformer is coupled to said bedplate.

[c9] 9. The wind turbine of claim 8 wherein said transformer is coupled to said bedplate by a chain.

[c10] 10. The wind turbine of claim 9 wherein said transformer is in contact with said tower.

[c11] 11. The wind turbine of claim 9 wherein said transformer

is in contact with a viscous fluid in a container attached to said tower.

[c12] 12. The wind turbine of claim 8 wherein said transformer has an outer diameter and an inner diameter, said inner diameter being sized to allow access from said tower to said nacelle.

[c13] 13. A wind turbine comprising:

a nacelle;

a blade rotor hub adjacent to said nacelle;

a main shaft coupled to said hub and said nacelle;

a generator coupled to said shaft between said nacelle and said hub, said generator having a housing containing a generator rotor adjacent to said shaft and a stator positioned adjacent to and radially outward from said generator rotor;

a cylindrical roller bearing coupled between said shaft and said housing adjacent to said nacelle; and,

a second bearing coupled between said shaft and said housing adjacent to said hub.

[c14] 14. The wind turbine of claim 13 wherein said second bearing is a double-tapered roller bearing.

[c15] 15. The wind turbine of claim 14 wherein said cylindrical roller bearing and said second bearing are spaced apart

a distance greater than the diameter of said shaft.

[c16] 16. The wind turbine of claim 15 wherein said second bearing is a crossed roller bearing.

[c17] 17. The wind turbine of claim 13 wherein said second bearing is a three row roller bearing.

[c18] 18. A method for transferring electrical power from a wind turbine comprising the steps of:

rotating blades using wind;

rotating a generator;

generating electricity with said generator;

supporting said generator with a tower;

suspending a transformer adjacent said generator;

damping the movement of said tower by contacting said transformer;

transmitting said electricity through said transformer.

[c19] 19. The method of claim 18 wherein said damping is accomplished by contacting said transformer with said tower.

[c20] 20. The method of claim 18 wherein said damping is accomplished by contacting said transformer with a viscous fluid connected to said tower.

[c21] 21. The method of claim 18 further comprising the step of converting the frequency of said electricity.